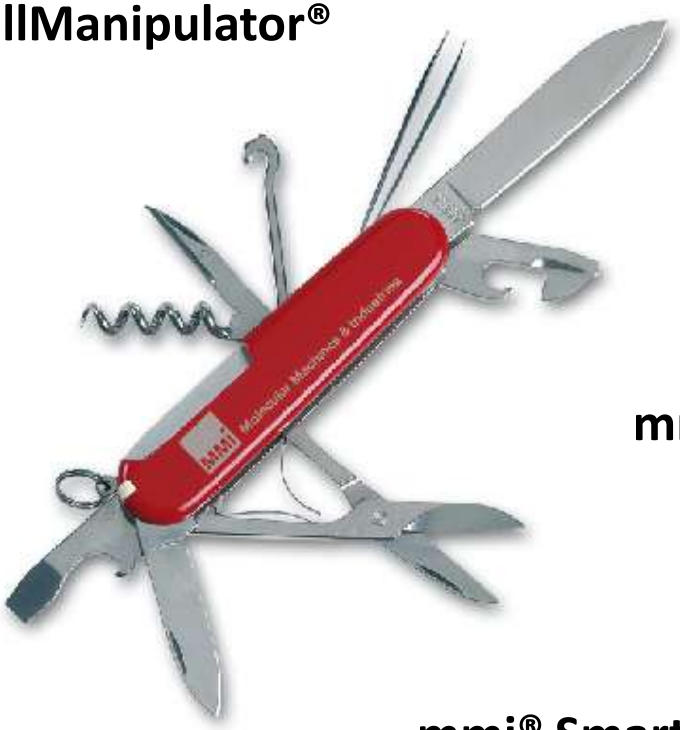
Technology Transition Workshop| *Lee Petruk*

mmi® CellCut Plus® Laser Microdissection System

MMI® Product Range

mmi®
CellManipulator®



mmi® CellCut Plus®

MMI®
Application
Support

mmi® CellEctor®

MMI® Service
& Support

mmi® SmartCut plus®

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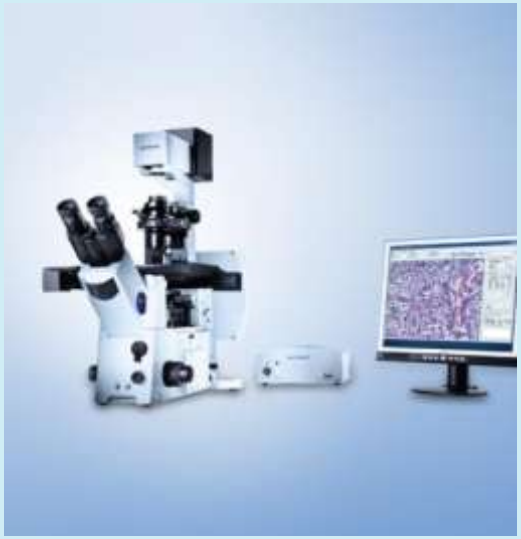
mmi CellCut® System Components

- Olympus® IX71 or IX81
- Nikon® Eclipse Ti inverted microscope
- Standard objectives - 4X, 10X, 20X and 40X
- High precision XY stage
- Solid state UV laser
- Cooled CCD color digital camera
- Intuitive mmi® software
- Computer and monitor
- Pen touch screen
- Various options



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Characteristics of the Laser

- **Compact design**
- **Solid state diode-pumped YAG Laser, 355 nm**
- **Long life span – approximately 10,000 hours**
- **Quasi continous performance pulse time 0.6 ns**
- **Laser cutting sub-micron at 40X and higher**

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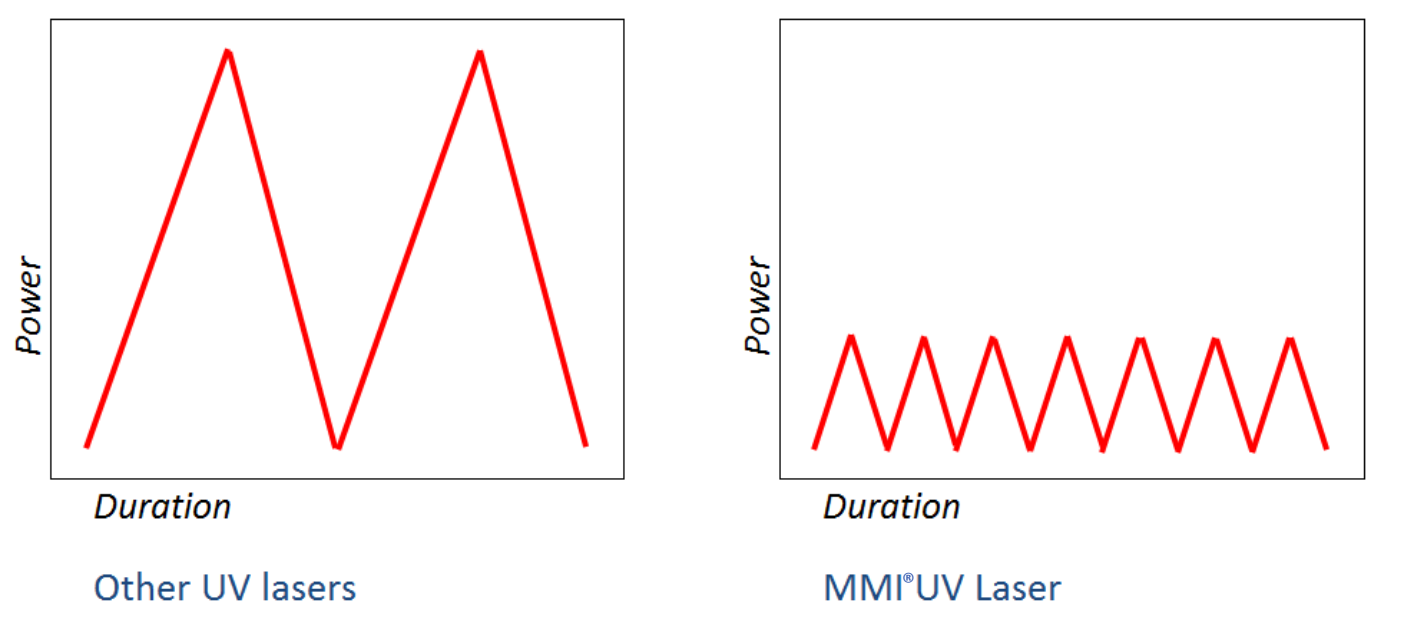
Advantage of MMI® Laser

- **MMI® uses less laser power at a higher frequency to minimize collateral damage**



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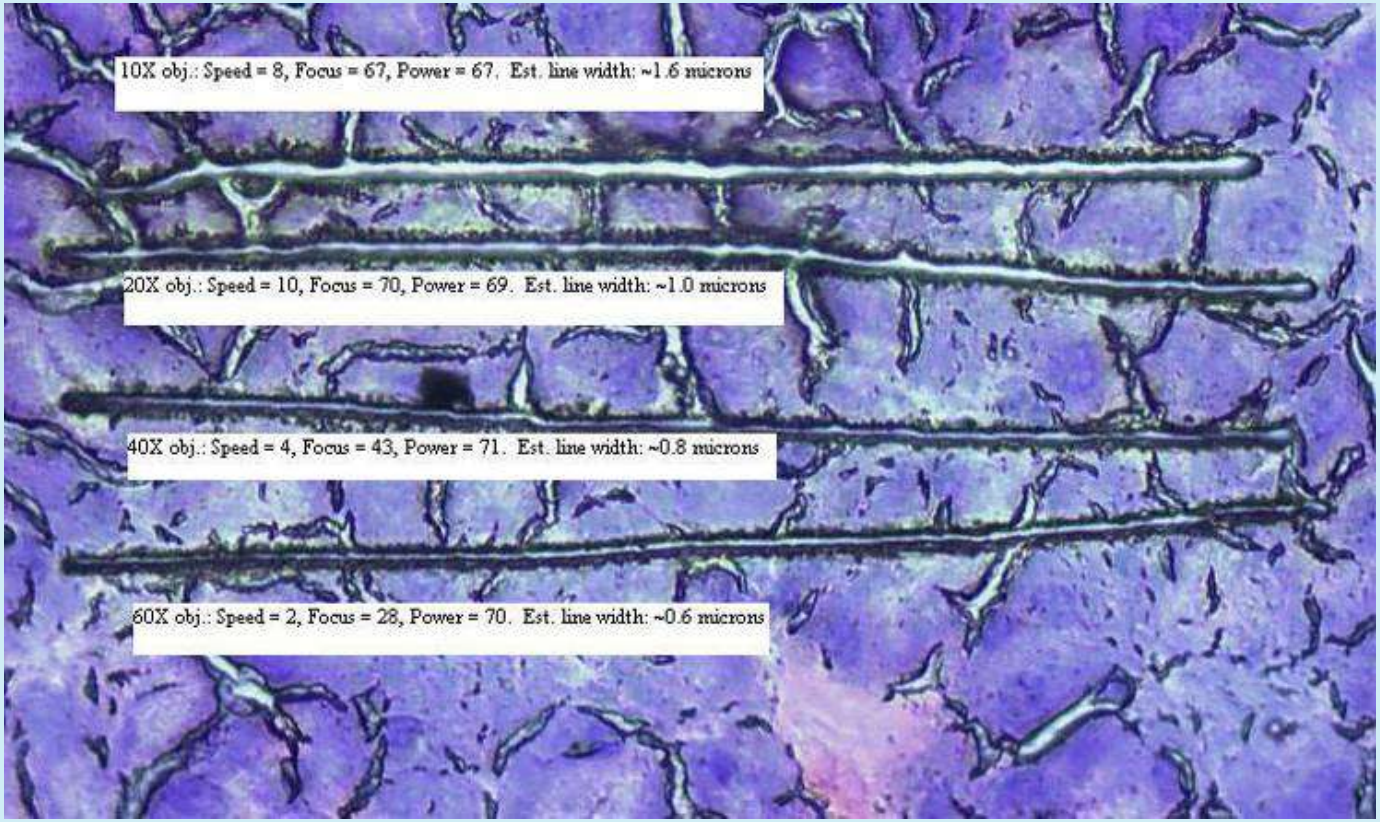
Cutting Examples of MMI® Laser



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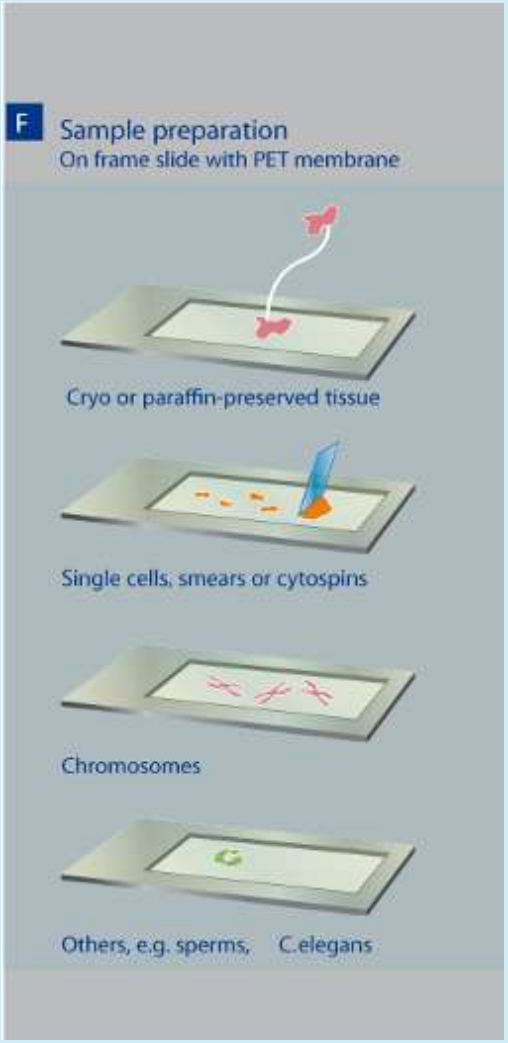
Materials Used for LCM

- **Paraffin samples**
- **Cryo samples**
- **Archival slides**
- **Smears**
- **Cytospins**
- **Live cells**



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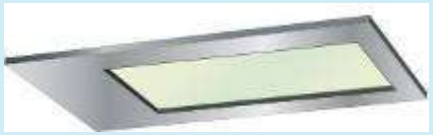
Slide Preparation

Result: absolutely "contamination-free" samples!

Specimen

Membrane - frame



Glass slide

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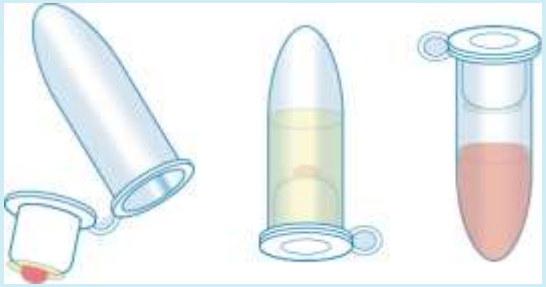
Contamination-free Microdissection

- **mmi® MembraneSlide® and a regular glass slide protect your sample from environmental contamination**
- **Sterilization/cleaning of the membrane before microdissection possible**
- **mmi® MembraneSlide® can be handled in the same way as a glass slide**
- **Superb image quality**



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Automatic mmi® CapLift®

- **Software-controlled**
  - **Positions the cap above the cutting area**
  - **Places the cap onto the membrane**
  - **Lifts the cap**

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mmi® IsolationCaps® Multicap Option

- **Available in 0.2 µl eight cap strips**

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mmi® IsolationCaps® – Three Collection Cap Sizes

- **0.2 µl**
- **0.5 µl**
- **1.5 µl**

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User-friendly Software

- **Single page**
- **Icon driven**
- **Multi-group drawing and cutting**
- **Whole slide scanning**

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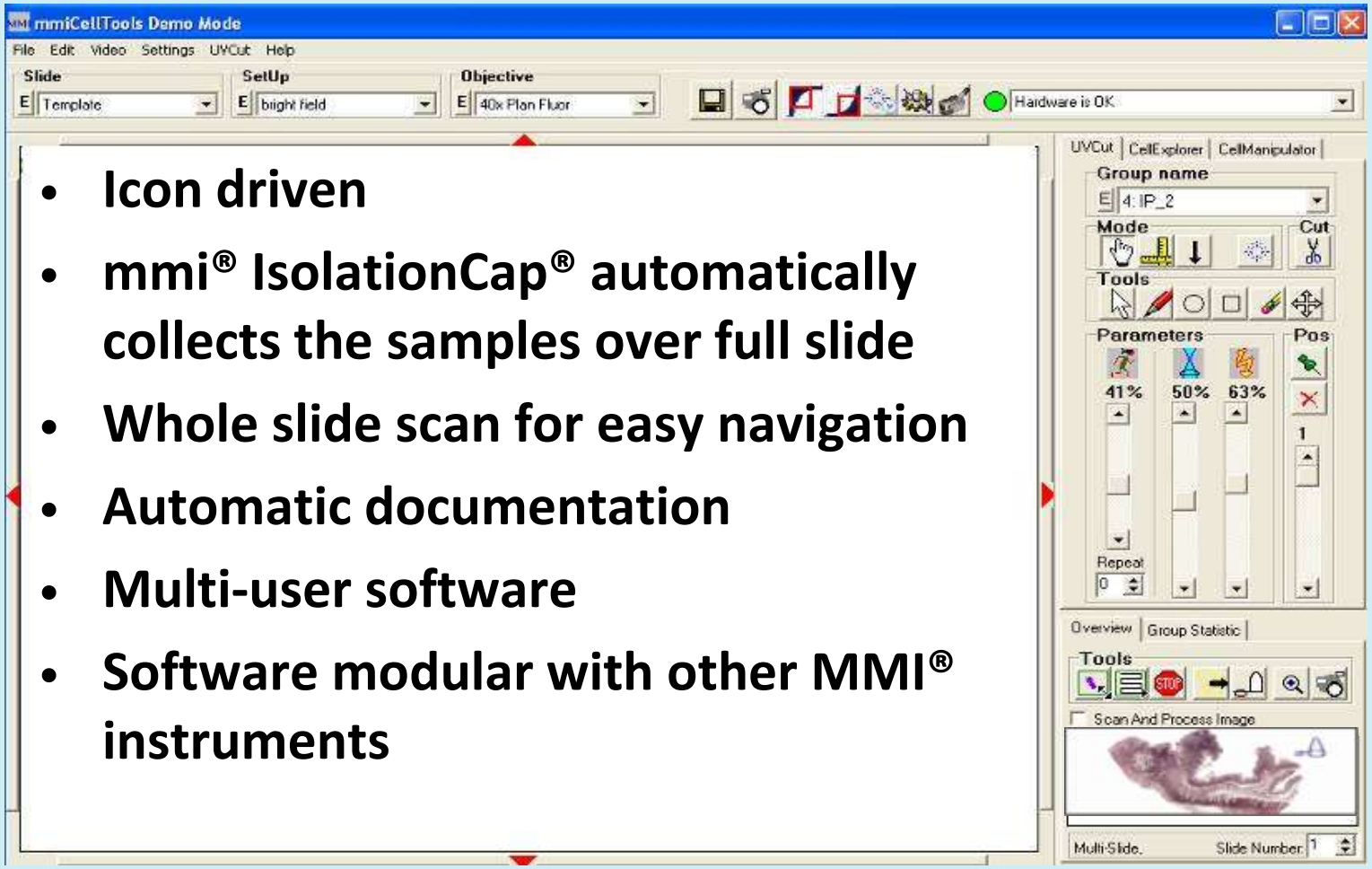
mmi® CellTools® Software



- Icon driven
- mmi® IsolationCap® automatically collects the samples over full slide
- Whole slide scan for easy navigation
- Automatic documentation
- Multi-user software
- Software modular with other MMI® instruments

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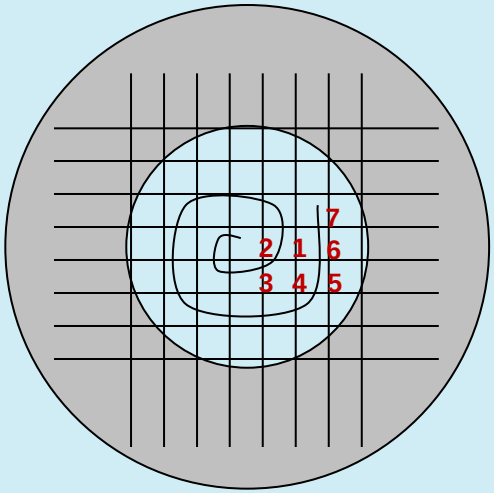
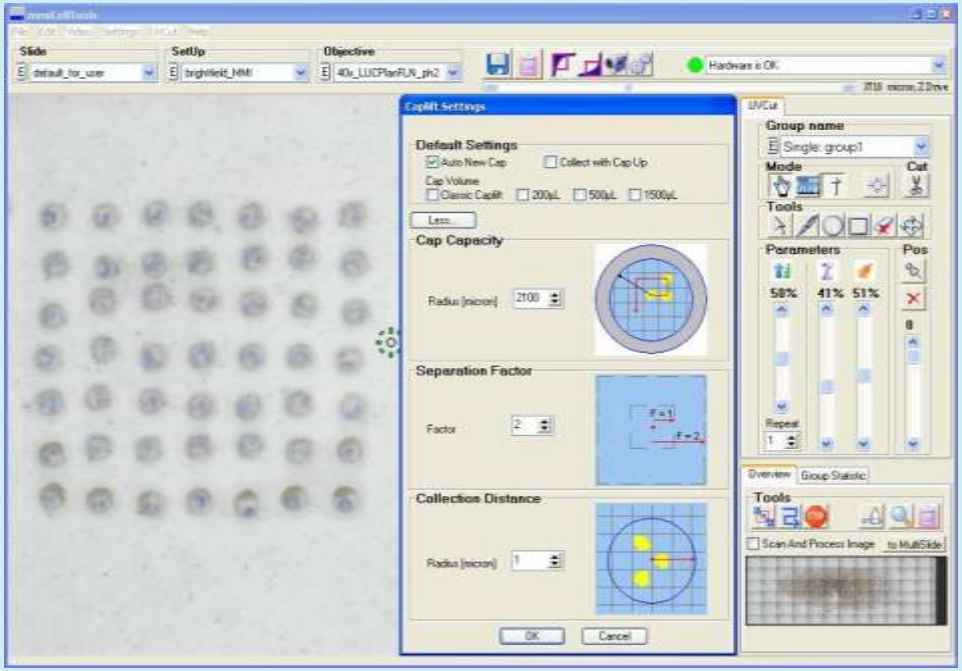
mmi® CapLift® Settings

- **Example for advanced mmi® CapLift® settings:**
  - **Video panel**
  - **Cap surface:**
    - **PTP* algorithm**





* Predefined target positioning

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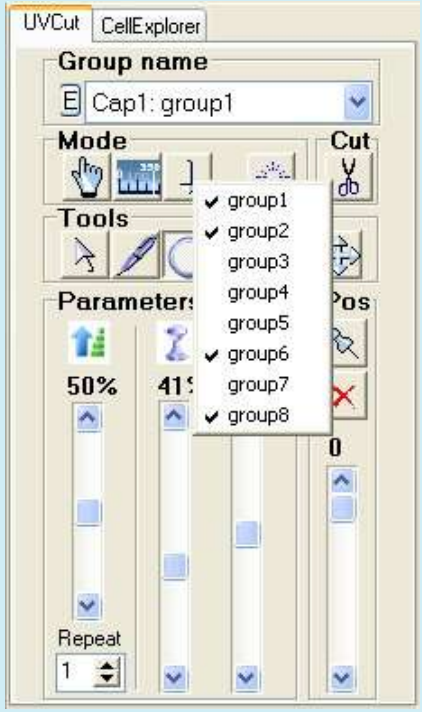
mmi® CellTools® – Group Cuttings

- **Definition and editing of groups**
- **UVCut → Draw and Cut → Group Editor**
- **Automated cutting of one, several, or all groups**



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Pen Touch Screen Option

To see a video of the pen touch screen in action, go to: http://www.molecular-machines.com/download_all.html - from the list of video downloads select *Cell Isolation – Pen Screen*

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mmi® CellTools® – Documentation

- **Pictures before and after microdissection**
  - **Save as TIF, JPEG, BMP or TGA**
  - **Number of cuts recorded**
  - **Tissue area in square microns**
  - **User name and file settings**

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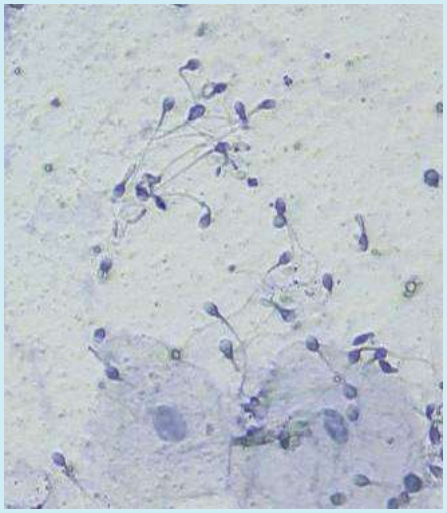
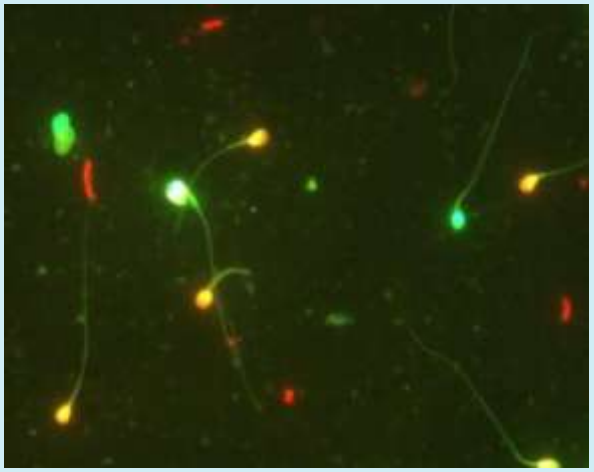
Isolation of Sperm

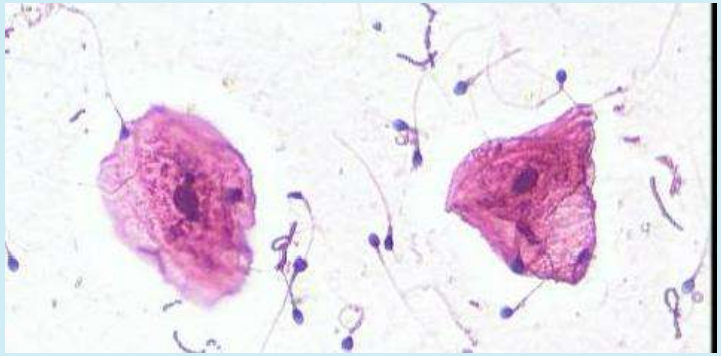
Gills



Anti-sperm AB

Acridine orange





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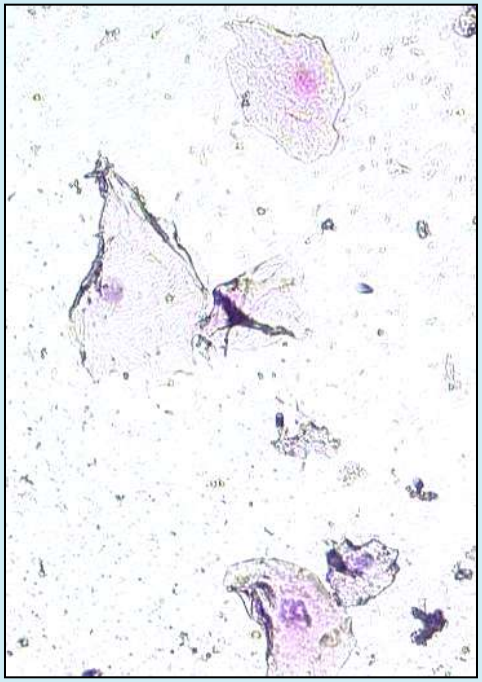
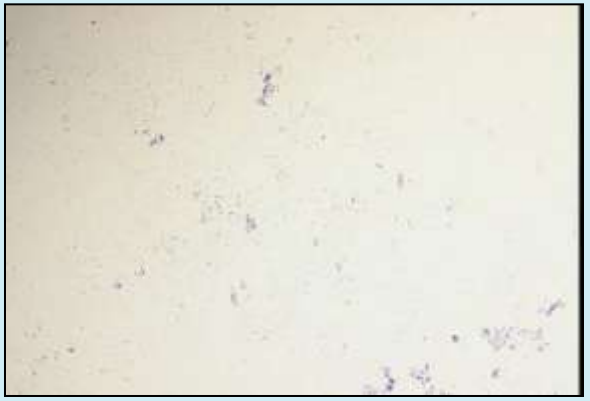
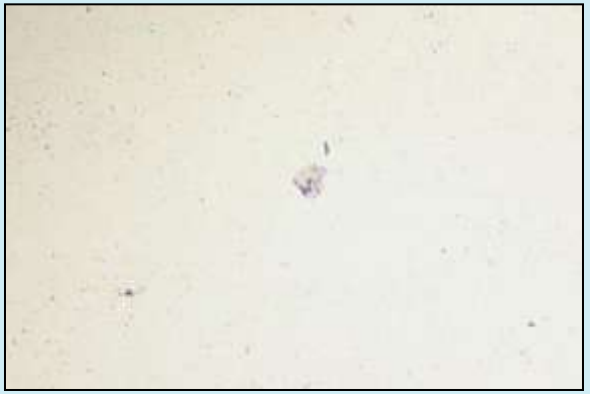
Old Case

Transferred cells on membrane stained with mmi® H&E Staining Kit for LCM



Glass slide after transfer





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mmi® CellExplorer®

- **Software solution developed for automatic cell identification with the mmi® CellCut®**

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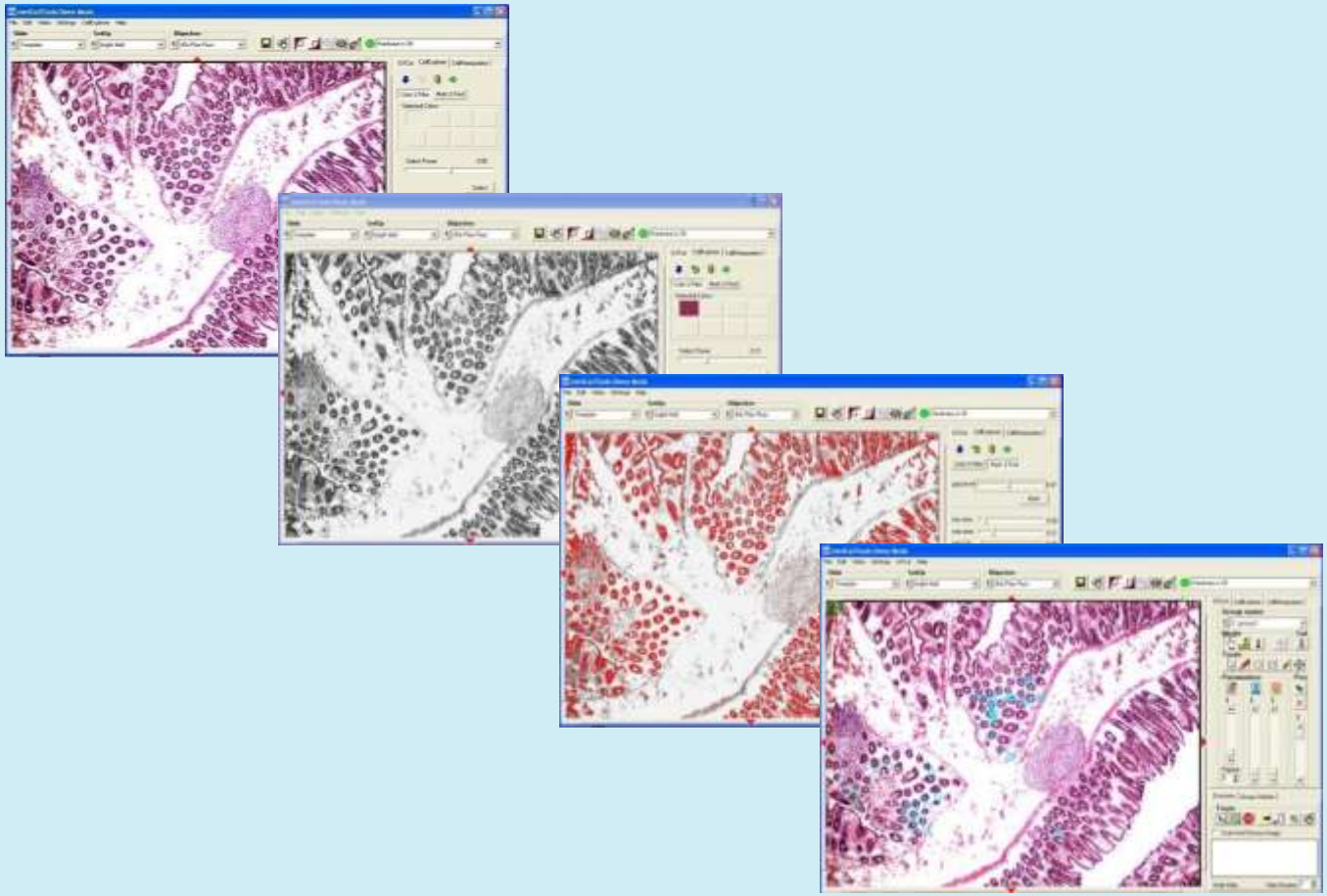
mmi® CellExplorer®



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mmi® SmartCut®

- **Olympus® CKX41 microscope or Nikon® T100 base with 4x and 20x objectives**
  - **Other objectives optional**
- **Computer controlled XY stage**
- **Solid state laser, 355 nm wavelength**
  - **Same specs as with mmi® CellCut®**
- **Digital camera with computer and 17-inch monitor**

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The mmi® CellEctor®

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mmi® CellEctor®

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Summary

- **Best laser in industry for microdissection, first in diode UV laser technology**
- **Contamination-free sample due to membrane slide and collecting cap technology**
- **Easiest handling of the system due to intuitive icon driven software**
- **Solution for manual and automated systems**
- **Modular system can be expanded and can be combined with mmi® CellEctor®**
- **Your choice of Nikon® Ti or Olympus® IX series microscope**

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Thank you for your attention.

Questions?

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Contact Information

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Molecular Machines & Industries

www.molecular-machines.com

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